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ABSTRACT

This paper introduces the concept of total teacher effectiveness for facilitating educational reform and improvement, using target oriented curriculum (TOC) change in Hong Kong as an example. TOC change is a complex process that involves preparing, changing, and reinforcing teachers in multiple domains at multiple levels. Teacher effectiveness includes three domains of teacher competence: cognitive, affective, and behavioral. In order to achieve successful curriculum change, it is necessary to develop teachers' cognitive, affective, and behavioral domains at individual, group, and school levels. Research suggests that the process of curriculum change (from traditional to TOC) can be divided into three stages: the unfreezing stage, the changing stage, and the refreezing stage. The unfreezing stage prepares teachers at all levels to be able to implement TOC, developing their readiness in the three domains. The changing stage involves teachers in actually implementing TOC. The refreezing stage is designed to maximize all the advantages gained from the TOC change, reinforce the positive effects, and eliminate potential negative effects. The TOC change process may be top-down, bottom-up, or a combination of the two, depending on the characteristics of the teachers and other school factors such as the authority hierarchy. (Contains 15 references.) (SM)

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Total Teacher Effectiveness:
Implication for Curriculum Change (TOC) in Hong Kong

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Total Teacher Effectiveness: Implication for Curriculum Change (TOC [1]) in Hong Kong

Introduction

Teacher effectiveness is always a major issue in current movements of curriculum innovations and school reforms. It is generally agreed that teachers are the key actors and make important contributions to the success of these changes (Cheng & Tsui, 1996; Cooper & Conley, 1991; Education Commission, 1992; Morris et al., 1996). Traditional studies on teacher effectiveness focus mainly on the performance of individual teachers particularly in a classroom context and ignore the complexity of teacher's work and school factors. This traditional conception of teacher effectiveness has its limitations and may not use to understand the complex nature of teacher effectiveness and its relation to school effectiveness in this rapid changing school environment (Cheng & Tsui, 1996).

On the other hand, contemporary studies of curriculum change and school change put more emphases on team work and collaboration among teachers (Maeroff, 1993; Fullan & Hargreaves, 1991; Nias et al., 1992). These emerging views indicate that the concept of "teacher" should be extended from individual to group or even school levels. By integrating Cheng's (1993) idea of the school process matrix and Medley's (1982) structure of teacher effectiveness, Cheng and Tsui (1996) proposed that a new conception of total teacher effectiveness should be used to understand and develop strategies for improving teacher

[1] Target Oriented Curriculum (TOC) is built on the framework of Target and Target-Related Assessment (TTRA). The TTRA was first introduced after the launch of Education Commission Report 5 in 1990. At that time, TTRA proposal received vigorous attacks from various parties in the education system, especially primary school teachers. In response, the Education Department modifies the proposal into a new project called TOC. After the pilot scheme, TOC was launched in 1995/96 with 76 primary schools. It is drastically increased to 526 schools in 1996/97, it is expected to have 690 schools in 1997/98. At this moment TOC is introduced in Chinese, English and Mathematics subjects only.

effectiveness in this era of change. This paper attempts to introduce the conception of total teacher effectiveness for facilitating educational reform and improvement. As such TOC (Target Oriented Curriculum) curriculum change in Hong Kong is used for illustration. And some guidelines for effective launching TOC were also proposed. Hopefully this proposed conception framework would be useful to school administrators and practitioners to understanding the complexity of teacher effectiveness and developing successful strategies to improve teacher effectiveness in ongoing curriculum changes and school reforms.

Total Teacher Effectiveness

As suggested in Cheng & Tsui (1996), the complex process and effect of teaching and learning can be studies in terms of layers including the affective, behavioral, and cognitive domains of teachers and students at multi-levels including individual, group, and school levels. Furthermore, the whole structure of total teacher effectiveness have four layers including the teacher competence layer, the teacher performance layer, the student learning experience layer, and the student learning outcome layer. Lastly, since teachers work in a school system, the influences of external teaching context, internal context, and pre-existing student characteristics are taken into consideration. Some of the major characteristics of this total teacher effectiveness conception are highlighted as follows (for details, please refer to Cheng & Tsui, 1996) :

Domains of effectiveness. In simplified terms, teacher effectiveness include three domains of teacher competence : cognitive, affective, and behavioral domains. The cognitive domain refers to teachers' understanding and believes in judging their actions. Affective domain refers to teachers' attitude or motive in making choice of actions. Behavioral or technical domain refers to teachers' knowledge, skills and techniques to perform the actions. In

order to achieve maximum effectiveness, what a teacher is doing should be consistence with what he / she is feeling and thinking. In sum, the greater congruence across domains, the higher the effectiveness of teacher could be achieved.

Levels of teacher effectiveness. In a school organization, teachers may work as an individual, as a group, and all as a whole (school). If teachers work as isolated individuals, the improvement of individual teachers does not necessarily promise overall school effectiveness. Especially in implementing curriculum change, mutual supports and team work are essential for success. It is believed that teachers work as teams or as a whole not only use their energy effectively but also create synergy. It is obvious that when teachers act together they may have a better chance to overcome the difficulties and problems encounter in curriculum and school change. In short, the teachers as a whole can support the groups and individual teachers to implement change; similarly the group can support its members to implement change. On the other hand, individual teaches may act as change agent to influence the group and school to change; similarly groups may also assert their influences to facilitate school change. In sum, the greater congruence across levels, the higher the effectiveness of teacher is achieved.

Based on the above conceptions, in order to achieve successful curriculum change, we should develop teachers in cognitive, affective and behavioral domains at individual, group and school levels. With the assumption that teachers are more effective when they are congruent across domains and across levels. Finally, the external context such as school organization structure, management practice, teaching facilities and resources would also hinder the effectiveness of teachers. These factors must be taken into consideration when implementing curriculum change and educational reforms.

A Framework of Total Teacher Effectiveness for Curriculum change

As remarked by Griffin (1993, p.18) TOC would be 'one of the most ambitious changes attempted by an education system'. After vigorous debates and challenges, TOC was first launched in 1995 with 76 participating primary schools. In the Interim Report on TOC Evaluation Project, Morris et al. (1996) conclude that there are many findings which deserve our attention in studying the effectiveness of TOC change. Some of the findings are highlighted as follows:

- the majority of teachers were uncertain and afraid of the adoption of TOC in their schools
- on the other hand, very few teachers were actually against TOC principle
- the features of teaching and learning promoted by TOC are not strongly evident in the classroom observed
- at the teacher level, some teachers are better implementers than others
- there was evidence that some schools, despite adopting TOC in Phase One, were actively resisting its implementation
- teachers pointed out that due to TOC, their workload, time spent and fatigue have increased
- an exceptionally high percentage of teachers (64%) indicated that there was a slight decrease in the clarity of school vision
- school heads / TOC coordinators are more optimistic and tend to see more positive changes than teachers

Apparently, these findings are related to teachers' beliefs, attitude and behaviors in response to TOC change at classroom and school levels. Apparently a more sophisticated

framework must be employed to understand and explain this phenomenon. Such that school administrators and TOC change agents could design appropriate activities to help teachers develop themselves and implement change from traditional curriculum to TOC.

Based on the conceptions of Lewin (1952), Schermerhorn et al. (1982), Ng & Cheng (1991), Cheng (1996) and Cheung & Cheng (in press), the process of curriculum change may be divided into three stages including the freezing stage, the changing stage and the refreezing stage as shown in Table 1. Furthermore, according to Cheng's (1994, 1996) organizational model of curriculum change, the effectiveness of TOC change would be affected by the congruence between teacher competence development and TOC change. By integrating the conceptions of Ng & Cheng (1991), Cheng (1994, 1996) and Cheng & Tsui (1996), a framework of total teacher effectiveness for curriculum change could be established. It is suggested that to maximize effectiveness of TOC change; teacher competence in cognitive, affective and behavioral/ technical domains at school, group and individual levels should be developed and in congruence to curriculum change in the unfreezing, changing and refreezing stages. The application of this framework would be elaborated in the following sections.

Table 1

Stages of Curriculum Change
from Traditional Curriculum to Target Oriented Curriculum (TOC) in School

Unfreezing Stage	Changing Stage	Refreezing Stage
• Identify, establish, and publicize the need for curriculum change	• Implement new curriculum according to the TOC framework	• Identify the overt and hidden advantages of the change to TOC
• Plan goals and policies for the change to TOC	• Not only pedagogical changes, should also implement cultural change	• Identify the adverse effects and eliminate them
• Analyze the force field and develop change strategies	• Pay attention to the administrative arrangements and structural changes	• Estimate all types of costs of the change
• Adopt top-down or bottom-up approach according to school structure and characteristics of teachers	• Change the affective, behavioral and cognitive aspects of the involved actors at the individual/ group/ school levels	• Assess the effectiveness of the change
• Increase driving forces	• Monitor the change process and ensure the progress towards the TOC goals	• Make recommendations for future actions
• Identify and minimize restraining forces	• Clarify the emergent psychological and technical uncertainties and reduce their potential damages to the change	• Make recommendations on the pedagogical and structural changes
• Prepare the necessary psychological (i.e., cognitive and affective) and technical readiness of those involved through staff development	• Learn new ideas and techniques and develop new goals	• Institutionalize the successful pedagogical and structural changes
• Prepare the necessary resources for the change to TOC		• Internalize the successful cultural changes
		• Clarify the uncertainties and frustrations due to unsuccessful experiences and encourage continuous learning

adapted from Cheng (1996)

The Unfreezing Stage : Prepare teachers for change to TOC

The unfreezing stage aims to prepare teachers at school, group and individual levels more ready and competent for launching TOC. Due to the increasing pressure from external and internal teaching contexts, a school needs to initiate/ adopt curriculum change (TOC) and adapt to these challenges for its survival and long-term development. But unfortunately, teachers (and even the principal) at school, group and individual levels are often burdened with daily workload and are used to existing curriculum and teaching practices. They may not be aware of the impacts from these pressure and they may ignore the need for the mentioned curriculum change. Therefore, in the unfreezing stage, the TOC change agent should help teachers to identify, establish and publicize the needs for curriculum change. Legitimize the need of change in school plans and school policies for actions (Cheng, 1996). In order to gain the full support from teachers, the decision making process of opting TOC should involved teachers at school, group and individual levels as far as possible.

On the other hand, although sometimes teachers (and even school heads) tend to accept the intrinsic value of TOC, they were reluctant to change and afraid of the adoption of TOC in their schools. This is because they are uncertain about and cannot anticipate the consequences of change (Morris et al., 1996). Follow this line of though, the TOC change agent should analyze the force field and develops strategies to increase the potential driving forces and minimize the potential restraining forces. In this stage, staff development activities are deemed necessary to prepare the necessary psychological (cognitive and affective) and technical readiness of those members who would be involved in the curriculum change ahead. In other words, teachers at school, group and individual levels should be well prepared to understand the nature and meaning of TOC, be willing and committed to it and have the necessary competence to implement it. Last but not the least, the TOC change agent should also prepare

the necessary resources for the change to TOC (Cheng, 1996). Some examples of teacher preparation in cognitive, affective and behavioral/ technical domains at individual, group and school levels are given in Table 2. The preparation of teachers for change to TOC are further elaborated as follows:

Cognitive Preparation

Cognitive preparation is to help teachers at all levels (school, group and individual) develop awareness to change, realize the need to implement TOC in relation to social-economic and political influences. Teachers are given opportunities to understand the main features of the curriculum innovation; perceive the consequences of change and anticipate the possible impacts to them at individual, group and school levels. Finally teachers at all levels are developed to hold a shared mission and consensus to change. They recognize TOC as a means for change and improvement. Apparently, there would be different emphasis for teachers at different levels.

At the individual level, teachers are more concerned about personal issues and impacts. In particular the conflicts of personal agenda, beliefs, interests, roles and responsibilities.

At the group level, attention is focused on group's needs and functions in relation to TOC change. In real practice, the groups are mainly subject-based. This means that more concrete issues such as subject content, curriculum paradigms and traditions should be addressed.

At the school level, attention is given to institutional or macro issues such as education policies, purpose and functions of schooling, survival needs of school and etc.

Affective Preparation

Affective preparation is to help teachers at school, group and individual levels develop a positive attitude to the change to TOC. Such that teachers at all levels are willing to listen the presentations on TOC initiative and to be involved in the formal and informal discussions of the issue. It also aims at reducing the psychological resistance of teachers at all levels with a view that they become more open and willing to adopt new concepts, pedagogy and experiment new teaching process at classroom, group and school levels. Obviously, there might be different emphasis for teachers at different levels.

At the individual level, the purpose of preparation is to help individual teachers establish a positive attitude to change. Such that they are willing to participate in the change ahead, be committed and willing to take up new roles and responsibilities in the course of change to TOC.

At the group level, group members are encouraged to discuss and exchange their views in a supportive and open atmosphere. Such that teachers as a group agree on and willing to proceed the change. A group is ready to change when mutual trust and group support among members are established.

At the school level, the target is to develop a open and friendly school atmosphere for discussing and investigating TOC initiative such that teachers as a whole feel comfortable, being supported and safe to change to TOC. Finally, teachers as a whole come up with consensus and commitment to proceed the change. The school is ready to change when teachers as a whole willing to share the responsibilities, support the school and other members to proceed TOC change.

Behavioral/ Technical Preparation

Behavioral/ technical preparation is to help teachers at school, group and individual levels develop appropriate competence including knowledge, skills, techniques and specialties for change to TOC. In this unfreezing stage, the major tasks are identifying the needs, development of common goals, policies, strategies and curriculum for change. The preparation for teachers at different levels would have different focuses. They are as follows:

At the individual level, teacher preparation should emphasize on developing personal competence such as pedagogical knowledge, classroom teaching skills, assessment techniques related to TOC framework. Teachers should also develop interpersonal and communication skills since they must work closely with other teachers and parents in planning and implementing TOC in their own school.

At the group level, the purpose of preparation is to develop teacher competence in group leadership and team building. Such that teachers are competent to help their groups and members to develop group work plans and subject-based curriculum for implementing TOC change in subject groups.

At the school level, the purpose of preparation is to develop teacher competence in instructional leadership, strategic leadership and participative decision making. Such that teachers have the competence to help school develop school policies, action plans, strategies, structural arrangements and school-based curriculum for implementing TOC change in school.

In sum, the unfreezing stage is to develop teachers' readiness in cognitive, affective and behavioral domain at individual, group and school levels. Such that they are more aware,

willing and competent for the TOC change ahead. Some examples of possible activities / tasks for the unfreezing stage are suggested as follows:

- create opportunities and means to present TOC initiative to teachers;
- create opportunities for teachers to examine the pros and cons of opting the change to TOC;
- create opportunities for teachers to discuss and present their views on TOC initiative;
- create opportunities for teachers to visit other schools which have already practiced TOC;
- create opportunities for teachers to share their feeling, experience and expertise in various topics related to implementation TOC;
- provide staff development on instructional leadership, strategic leadership, participative management and team building;
- conduct group-based/ subject-based workshops on developing TOC teaching resources and relating teaching skills;
- conduct workshops on developing personal competence in pedagogical knowledge, teaching skills, assessment techniques and interpersonal skills for implementing TOC;
- create opportunities for individual teachers to discuss personal problems and clarify queries.

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Table 2

Unfreezing Stage - Prepare Teachers for change to TOC

Cognitive Preparation	Affective Preparation	Behavioral / Technical Preparation
• teachers realize the need to implement TOC in relation to social-economic and political influences • teachers understand the main features of the innovation • teachers hold a shared school mission and recognize TOC as a means for change and school improvement • teachers understand and anticipate the possible consequences and impact to school In particular, the followings should be emphasized: at individual level personal issues e.g. conflicts of personal agenda, beliefs, interests, roles and responsibilities at group level group/ subject issues e.g. subject content, curriculum paradigms and traditions at school level macro issues e.g. education policies, purpose and functions of schooling, survival needs of school	• teachers willing to listen change agent's presentations on TOC initiative • teachers are willing to be involved in the discussion of the innovation at staff meetings and other sharing sessions • teachers feel comfortable, being supported to the change to TOC • teachers are willing to adopt new concepts, pedagogy and experiment new teaching process • teachers are willing to take up new roles and share responsibilities in the course of change to TOC In particular, the followings should be emphasized: at individual level develop motivation and commitment at group level establish mutual trust and group support at school level create open and friendly school atmosphere	teachers have competence to: • develop school plans and policies for change to TOC • interpret TOC framework and develop new curriculum • improve the use of resources and establish resource centre for developing and implementing TOC • explore and access to new teaching technologies required for change to TOC • identify and remove factors unfavorable for change to TOC In particular, the followings should be emphasized: at individual level personal competence e.g. pedagogical knowledge, classroom teaching skills, assessment techniques related to TOC framework at group level competence in group leadership, team building at school level competence in instructional leadership, strategic leadership, participative decision making

The Changing Stage : Implementing change to TOC

In the changing stage teachers are involved in the actual implementation of TOC. Teachers are required to interpret the TOC framework and put it into practice at individual, group, and school levels. If we view TOC as a complex innovation designed to bring about fundamental changes to pedagogy, assessment and curriculum conceptions (Morris et al.). In the changing stage, the effectiveness of TOC change would be maximized when teachers at individual, group, and school levels make changes in cognitive, affective and behavioral domains in accordance with the design of TOC. We must pay attention to the fact that TOC differs markedly from the current practice in the education system, teachers have to withstand great pressure and stress in the course of implementing TOC change. Thus, we must help teachers to clarify the emergent psychological and technical uncertainties and reduce their potential damages to the change. Probably, in this changing process, they have to learn new ideas and techniques and develop new goals. In other words, organizational learning is necessary for implementing TOC change (Cheng, 1996). Some examples of teacher change in cognitive, affective change and behavioral/ technical domains at individual, group, and school levels are given in Table 3. They are further elaborated in the following paragraphs.

Cognitive Change

Cognitive change means that teachers at individual, group, and school levels realize that implementing TOC not just involve pedagogical changes, should also implement cultural change. Teachers at all levels should accept the philosophy, beliefs and values promoted by TOC. Lastly, they should aware to administrative arrangements and structural changes required for successful implementation of TOC. In particular,

At the individual level, individual teachers should accept the philosophy and values promoted by TOC. In other words they should make changes in values, beliefs and assumptions of students, teaching and learning in accordance with the TOC framework.

At the group level, teachers as a group should understand and aware to the functions, roles and responsibilities of the group in implementing TOC.

At the school level, teachers as a whole should understand and aware to change in school goals and mission. They should also pay attention the administrative arrangements and structural change necessary for implementing TOC in the school.

Affective Change

Affective change means that teachers at individual, group, and school levels advocate the implementation of TOC. That is they are committed to implement TOC and willing to apply new concepts, pedagogy and assessment techniques in real teaching process at classroom, group and school levels. In this changing stage, teachers at all levels should feel confident, competent and being supported in implementing the change. Details of affective change at individual, group and school levels are further discussed in the following paragraphs.

At the individual level, self-efficacy and satisfaction are important factors for implementing change. In the changing stage, individual teachers should change their attitude toward TOC, feel more competent and are satisfied in implementing TOC. They advocate the change and take it serious in actual teaching. Finally they should display high motivation and commitment in implementing TOC.

At the group level, teachers as a group develops team spirit in implementing TOC. The group and members are eager to promote and practise TOC framework in actual teaching process.

At the school level, teachers as a whole welcome change to TOC and take it seriously into implementation. The school develops a supportive culture and solemn attitude towards implementing TOC in school.

Behavioral / Technical Change

Behavioral / technical change means that teachers change their teaching behaviors, practise and apply new knowledge, skills and expertise learned to implementing TOC at individual, group, and school levels. In specific they should plan, organize, coordinate, monitor and evaluate teaching and learning activities according to the TOC framework. Furthermore, they should adopt, master and practise knowledge, skills and techniques promoted by TOC in real teaching process. Lastly, they should also able to procure and manage resources for implementing TOC change. Details of behavioral/ technical change at school, group and individual levels are further discussed in the following paragraphs.

At the individual level, behavioral change means that individual teachers change their classroom practice and behaviors, develop and implement class-base curriculum according to TOC framework. To be effective in implementing TOC change at classroom level, teachers must adopt, improve, master and practise knowledge, skills and techniques promoted by TOC in real teaching process. Also they must be competent in managing personal resources and communicating with other teachers and parents.

At the group level, behavioral change means that teachers as a group changes its work norms and procedures, develop and implement group-based or subject-based curriculum by adopting the TOC framework. To be effective in implementing TOC change at group level, they must demonstrate group leadership and able to promote team work. Such that they can motivate, mobilize and support group members to implement change. Also they should work as team to share their expertise and resources which reduce their heavy workload and uncertainties in the course of change.

At the school level, behavioral change means that teachers as a whole actualize school plans and strategies to implement TOC by developing and implementing school-based curriculum. To be effective in implementing TOC change at school level, they should improve, master and demonstrate effective instructional leadership and strategic leadership in managing curriculum change(1996). Such that they can lead the school and support members to implement TOC change. Teachers at school level should liaise with other important constituencies in the community in getting their support and extra resources for implementing TOC change.

In short, in the changing stage teachers must demonstrate changes in cognitive, affective and behavioral/ technical domain at individual, group, and school levels. Such that they are advocate of change; and are technically competent and effective in implementing change. Some examples of possible activities / tasks for the changing stage are suggested as follows:

- create opportunities for teachers to discuss and clarify the interpretation of TOC framework in actual teaching;

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- create opportunities for teachers to work together in developing school curriculum, group-based / subject-based curriculum and class-based curriculum;
- conduct workshops and staff development programs for teachers to advance knowledge, skills and techniques to implement TOC;
- support and empower teachers to implement TOC;
- modify school structure and communication channels to facilitate coordination and communication among groups and teachers;
- create opportunities for teachers and groups work together in developing collegiality and team spirit;

Table 3

Changing Stage - Implementing TOC Change

Cognitive Change	Affective Change	Behavioral / Technical Change
• teachers realize not only pedagogical changes, should also implement cultural change • teachers pay attention to the administrative arrangements and structural changes • teachers accept the philosophy and values promoted by TOC In particular, the followings should be emphasized: at individual level change personal values, beliefs, and assumptions of students, teaching and learning at group level change perception of group's roles and responsibilities at school level change perception to school goals, missions administrative arrangements and school structures	• teachers advocate the change to TOC • teachers feel more confident and competent in implementing TOC • teachers are eager to apply new concepts, pedagogy in real teaching process • teachers are committed and satisfied to implement TOC In particular, the followings should be emphasized: at individual level develops self-efficacy, motivation and commitment at group level develops team spirit and collaboration at school level develops supportive and collegial school culture	• actualize action plans and strategies to implement TOC • develop and implement TOC curriculum • change and apply knowledge, skills and techniques promoted by TOC in actual teaching process • coordinating and directing involved teachers to implement TOC • communicate with parents and other interested constituencies; provide them information about the change • procure, mobilize and reallocate whole-school resources to support implementing TOC In particular, the followings should be emphasized: at individual level develop and implement class-based curriculum; practise knowledge, skills and techniques promoted by TOC framework at group level develop and implement subject-based curriculum, practice group leadership, team work at school level develop and implement school-based curriculum, practice strategic and instructional leadership

The Refreezing Stage: Refreezing TOC change

After the unfreezing stage, the changing stage, it is necessary to refreeze the positive outcomes of the change. The purpose of the refreezing stage is to maximize all the advantages gained from the TOC change and perpetuate the positive effects to a longer period. Of course, in this stage, eliminating the potential side effects is also important (Cheng, 1996, Cheung & Cheng in press). To achieve this purpose, teacher should be facilitated to conduct continuous reflection and evaluation in cognitive, affective and behavioral/ technical domains at individual, group and school levels (Cheng, 1994; Cheng & Tsui, 1996). The purposes and requirements of reinforcement in cognitive domain, affective and behavioral/ technical domains are described as follows:

Reinforcement in Cognitive Domain

In the refreezing stage, the TOC change agent might facilitate teachers to reflect, evaluate and justify their changes in beliefs, values and assumptions to students, teaching and learning in implementing TOC; clarify school goal and mission and re-examine the meanings of curriculum change. Such that teachers can internalize the successful cognitive change at individual, group and school levels for supporting ongoing TOC change and challenges ahead.

At the individual level, the focus is to reinforce individual teachers' values, beliefs and assumptions adopted to implement TOC change in actual classroom teaching. The meaning of change is re-examined, clarified and reinforced.

At the group level, the focus is to reinforce the group's understandings and needs to implement TOC. The purposes of group functions and curriculum paradigms and traditions are re-examined, clarified and reinforced.

At the school level, the focus is to reinforce school's understandings and needs to implement TOC. School goals and mission will be re-examined, clarified and reconfirmed.

Reinforcement in Affective Domain

In this stage, teachers reflect on their attitude change, identify and confirm all the important, overt and hidden, planned and unintended advantages to themselves; clarify uncertainties encountered; and recognize successful experiences generated from implementing TOC. Such that teaches can internalize the successful affective changes at individual, group and school levels for supporting ongoing change and challenges ahead.

At the individual level, individual teachers identify and confirm all the important advantages gained; and successful experiences generated from implementing TOC. Such that they may maintain and promote higher motivation and commitment to the ongoing change and future practice.

At the group level, teachers as a group identify and confirm all the important, overt and hidden advantages gained; and successful experiences generated from implementing TOC. In particular, the practice of team work and collaboration. Such that the group may promote better team spirit to support group and members to implement the ongoing change and future tasks.

At the school level, in similar vein teachers as a whole is reinforced by the positive outcomes generated from implementing TOC. In particular, the importance of establishing a supportive and collaborative culture. Such that the school may promote a more positive and collaborative school culture to support members to implement the ongoing change and future innovations.

Reinforcement in Behavioral/ Technical Domain

In this refreezing stage, teachers assess, evaluate and honor their performance and behaviors in implementing the change. Such that they can institutionalize the successful behavior/ technical changes and the related experiences in order to perpetuate their advantages and benefit more people in the ongoing change and challenges ahead.

At the individual level, individual teachers will reflect and evaluate their own performance and behaviors in implementing TOC in terms of the pedagogical knowledge, classroom teaching skills, assessment techniques used. Based on the result of evaluation, teachers will make adjustment and conform to the successful behaviors which are conducive to implementing TOC.

At the group level, the group of teacher will reflect and evaluate their group performance in implementing TOC such as the development and implementation of subject-based curriculum. In particular, effects of teamwork and group leadership are evaluated. After that, the group will institutionalize the successful behavioral/ technical changes and experiences. This would become the norm of the group for practicing the ongoing change and future practice.

At the school level, in similar vein, teachers as a whole will go through reflect and evaluation on school's performance in implementing TOC such as the development and implementation of school curriculum. Particularly, the effects of instructional leadership and strategic leadership will be evaluated. After that, the school will institutionalize the successful behavioral/ technical changes and experiences. Finally this would become the standards and policy of the school for practicing the ongoing change and future practice.

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In sum, the above portrays the purposes and some requirements for refreezing in cognitive, affective and behavioral/ technical domains at individual, group and school levels. Appropriate staff development and activities could be conducted based on these requirements described in above.

Strategies for Launching TOC

Based on the discussions in previous sections, the effectiveness of TOC change is depended on the effectiveness of teachers as a whole school, groups and individuals in the unfreezing, changing and refreezing stages. Along this line of thinking, we may set priority to develop teacher effectiveness at school level, group level or individual level in different stages of TOC change. Cheng (1996) postulated that there might exist a *hierarchy of influence* across these levels of teacher effectiveness in the curriculum change model. Specifically, curriculum change and teacher effectiveness at the individual level are influenced by those at the group level and the group level is affected by those at the school level. Taking the unfreezing stage for illustration. This conception suggests that priority should be given to unfreeze teachers at the school level first, then the groups and finally the individuals. This sequence of change seems quite logical because in a school organization, individual teachers need the support and empowerment from their groups and school for implementing change. Similarly the groups need the support and empowerment from the school. In practice, this suggestion should not be treated as hard and fast rule. Each school may have its own priority of unfreezing depending on its own characteristics and conditions. In some cases, the school has a group of very competent and enthusiastic teachers who are already for change. Then the change should be started at the group and then the school or individuals. To bear in mind, no matter how we set the priority of

levels, a state of congruence across levels must be achieved in order to maximize the overall teacher effectiveness and curriculum effectiveness (Cheng, 1996; Cheng and Tsui, 1996).

In Hong Kong, an interim report on the TOC evaluation project indicated that most schools adopted a top-down approach in launching TOC in their schools (Morris et al., 1996). It is believed that at this moment, teachers in Hong Kong primary schools in general are lacking professionalism, culture and readiness to initiate curriculum changes. This phenomenon could be explained that " in reality, given the hierarchical structure of authority in primary schools, the majority of school teachers, particularly, hoped that or were pleased with the fact that the legitimate authority and professional advice came from the top " (Morris et al., 1996 p. 57).

In sum, there are different strategies for launching TOC change and developing teacher effectiveness. The TOC change agent may adopt a top-down, bottom-up or combination model which largely depends on the characteristics of teachers and other school factors such as the hierarchical structure of authority.

Conclusion

TOC has been view as the significant landmark and one of the most ambitious curriculum change attempted in the post second world war history of curriculum reform within schools in Hong Kong (Griffin, 1993; Morris et a., 1996). The initiative first started off with 76 schools in 1995/96 and is increased to 526 schools in 1996/97 and is expected to be 690 schools in 1997/98. The impact of TOC change to primary school system would be enormous. However, research findings suggest that teachers are uncertain, reluctant and afraid of adoption of TOC in their schools. Schools have great difficulties in promoting and implementing of TOC (Morris et al., 1996). Since teachers are the key actors in the process of curriculum change, the effectiveness of TOC change depends very much on the effectiveness of teachers

who implement it. Teacher training or development is deemed necessary for successful implementation of TOC.

In this paper, a framework of total teacher effectiveness for curriculum change is proposed to illustrate how TOC could be implemented more successful through the development of teachers. Based on the total teacher effectiveness conception (Cheng and Tsui, 1996), teachers should be developed as individuals, groups and as a whole school in cognitive, affective and behavioral/ technical domains. On the other hand, TOC change could be view as a change process including the unfreezing stage, changing stage and refreezing stage (Cheng, 1996; Cheung & Cheng, in press; Ng & Cheng, 1991). Built on these conceptions, the present framework suggests that there are three stages of TOC change and teacher development.

In the unfreezing stage, the aim is to prepare teachers for change to TOC at individual, group and school levels. This include cognitive preparation, affective preparation and behavioral/ technical preparation. Such that teachers at all levels are well prepared to understand the nature and meaning of the TOC change, be willing and committed to it and have the necessary competence to implement it.

In the changing stage, the aim is to ensure teachers at all levels to implement TOC change successfully. This include cognitive change, affective change and behavioral/ technical change. Such that teachers at all levels can implement change, facilitate change and change themselves accordingly when necessary.

In the refreezing stage, the aim is maximize all the advantages gained from the TOC change and perpetuate the positive effects to a longer period. This include reinforcement in cognitive domain, reinforcement in affective domain and reinforcement in behavioral/ technical domain. Therefore teachers at individual, group and school levels should be given the opportunities to conduct self reflect and evaluation.

As shown in above, TOC change is a very complex change process which involves preparing, changing and reinforcing teachers at multi-domains and in multi-levels. In contrast, traditional staff development programs which focus only on technical skills of teaching TOC might be too simplified and inadequate to prepare teachers for such complex TOC change.

In sum, the present framework may have two implications. First, it provides a more comprehensive and holistic framework for developing teachers to implement TOC change. Such that teachers at individual, group and school levels are better developed for the change which in turn might promise higher effectiveness of TOC change.

Second, when teachers at all levels have gone through these three stages of TOC change and teacher development as suggested in this framework, they have developed the total teacher effectiveness. That is what they have developed not only support them for implementing TOC change, but also benefit them for future practice and challenges ahead. Just to name a few, collaborative school culture, team spirit, commitment, motivation, leadership and self reflection etc. Such that teachers are more effective and have better chance to improve the quality of teaching and learning in school and in Hong Kong.

It is hope that this proposed framework might provide a new direction for practitioners to develop effective strategies for implementing TOC in particular and curriculum reforms in general in either local or international contexts.

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